University of Agronomic Sciences and Veterinary Medicine of Bucharest
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Canopy and cultivar influences on peach fruit quality

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Introduction

- Peaches are nutritionally important, as they are full of phenolic compounds and vitamins (e.g., ascorbic acid; vitamin C) linked with health benefits and antioxidant activity and are one of the most consumed tree fruits worldwide

- The trees bear fruit advantageously from the third year after planting, and the fruits are eaten fresh or used as raw material for processing, from which a large number of finished products can be obtained (Cepoiu and Manolache, 2006).

The main chemical components of peaches

Substance	Content	Substance	Content
Total carbohydrates	8,5 – 12,6 g %	Phosphorus	23 mg %
Total acidity	0,40 – 0,89 g %	Calcium	7,8 mg %
Pectic substances	0,35 – 0,80 g %	Vitamin A	0,44 mg %
Protein substances	0,50 – 1,13 g %	C vitamin	9,50 mg %
Total cellulose	0,50 – 0,95 g %	Vitamin PP	0,85 mg %
Potassium	205 mg %	Vitamin E	0,60 mg %

Source: Tănăsescu (2005)

Introduction

The objective was to analyze the influence of the canopy type, of the rootstocks and of some cultivars with different ages, **on fruit quality**

The old peach and nectarine orchards in our country are in the classic system, with low density and poor yield.

Vertical axe Trident

Trident Vertical axe

Therefore, through observations and research on the behavior of new varieties of peach and nectarine, it is desired to introduce them in large-scale crops, due to consistent production and special qualities for the consumer market.

Materials and Methods

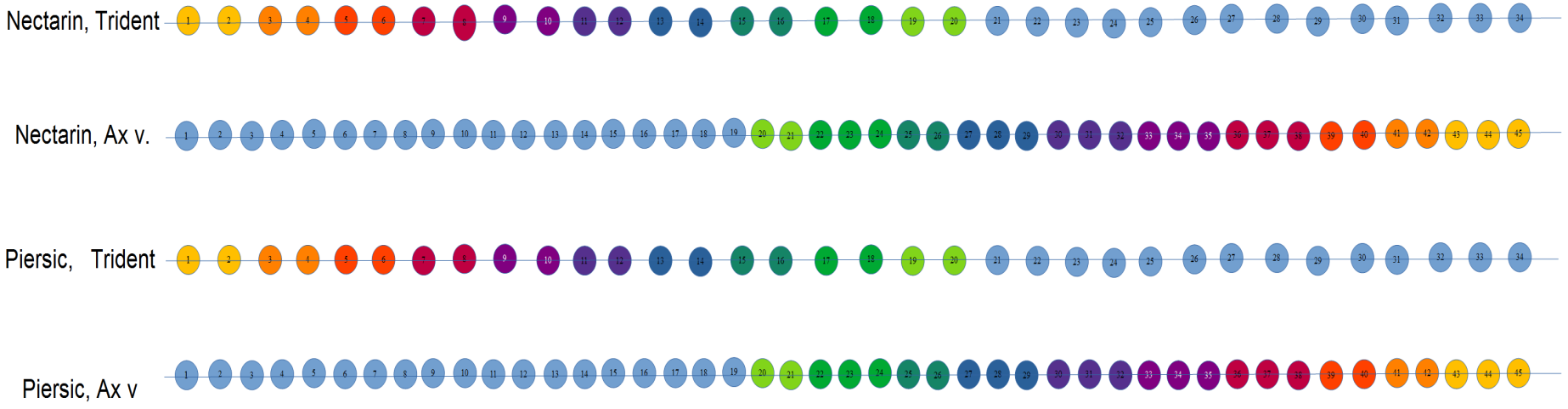
- **Biological material**

- 16 new nectarine cultivars grafted on Mirobolan 29C, GF677 and Saint Julien A rootstocks
- 2 rows (2017 planted): - Trident (4.0 x 2 m)
- Vertical Axe (4.0 x 1.5 m)

- 15 new peach cultivars grafted on GF677, Mirobolan 29C and Adesoto rootstocks
- 2 rows (2017 planted): - Trident (4.0 x 2.0 m)
- Vertical Axe (4.0 x 1.5 m)

Materials and Methods

Planting scheme - New peach and nectarine cultivars



Materials and Methods

- The fruits were harvested in plastic crates by variety and repetition and stored in the cold room (0-1°C, 85-90% humidity)
- Determining the fruit weight with a technical balance
- - 20 fruits per cultivar

Materials and Methods

- The caliber of the fruit was determined with the caliper on ten fruits.
- Each fruit was measured in two sections, longitudinal and transversal

Materials and Methods

- Firmness is the fruits flesh resistance to pressure.

- Exceeding the optimum time of harvest greatly reduces the consistency of vegetables and fruits, which can degrade at the slightest mechanical action, including their own weight

- Fruit flesh firmness was determined with:

- Turoni FR 5120 digital penetrometer

- Cleaning knife used to remove the skin

- 8 mm size piston

Materials and Methods

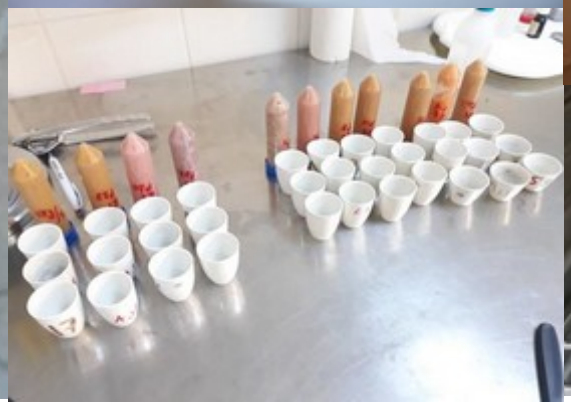
- Total soluble solids - measured with the refractometer.

- For determining TSS, the following were used:

- Krüss DR301-95 refractometer
- Knife
- Press for obtaining the fruit juice from the pulp
- Paper towels

Materials and Methods

- Determination of total dry matter content
  - Memmert UN110 oven, crucibles, Petri dishes, knife.
  - crucibles were placed in the oven for 24 hours at 105 ºC

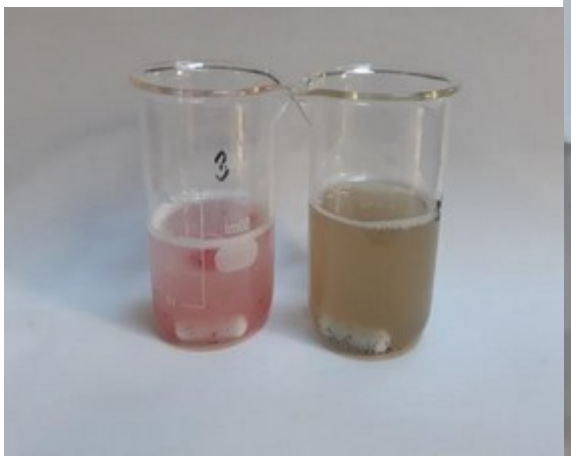


Materials and Methods

- Titratable acidity.
  - determined by titration with 0.1 N NaOH with TitroLine 5000/50 M2.

  - the following were used:

- TitroLine easy automatic titrator
- Mill
- Knife
- Berzelius glasses 50 ml - high shape
- 50 ml graduated cylinder

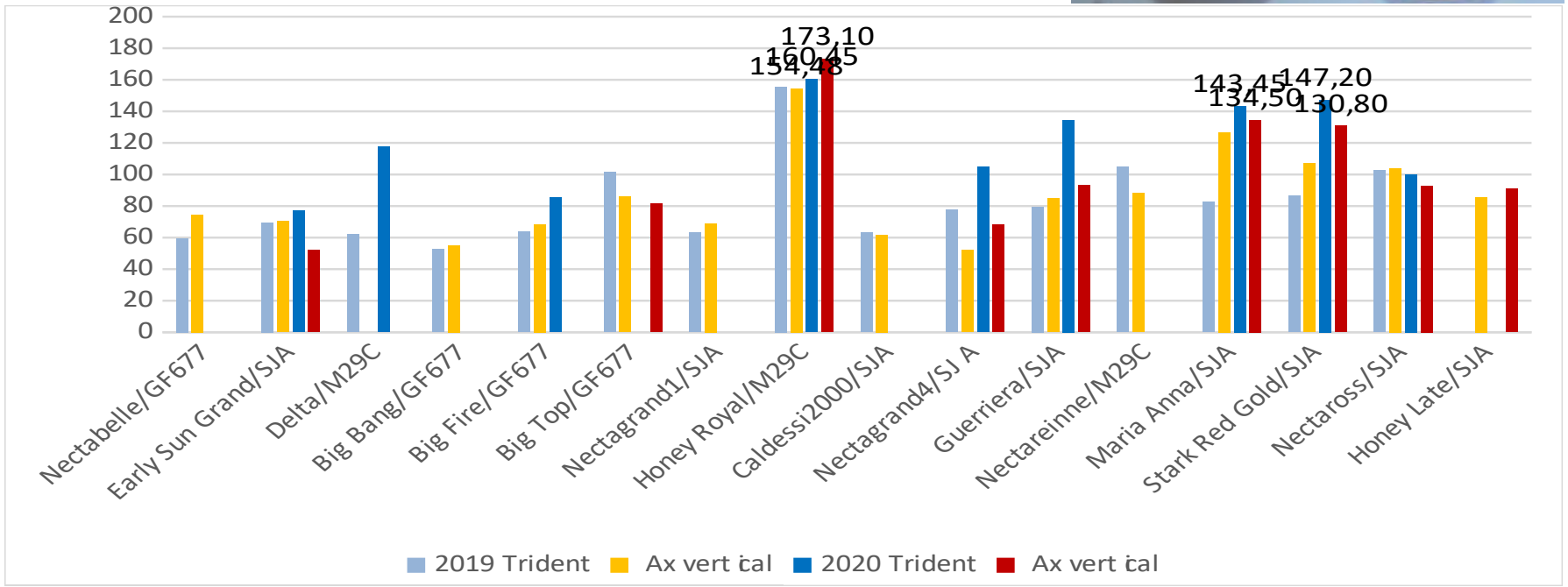


Results and discussions

Nectarine fruits weight (g)

- The average fruit weight on Trident increased in 2020 by 37.23% compared to 2019.
- The average fruit weight on the Vertical Axe in 2020 was similar to 2019, in some cultivars increased, in others it decreased.
- The average fruit weight on Triden was similar to Vertical axe in 2019. In 2020 the fruit weight on Trident was 16.5% higher than on Vertical axe.

Nectagrand 4/SJ A

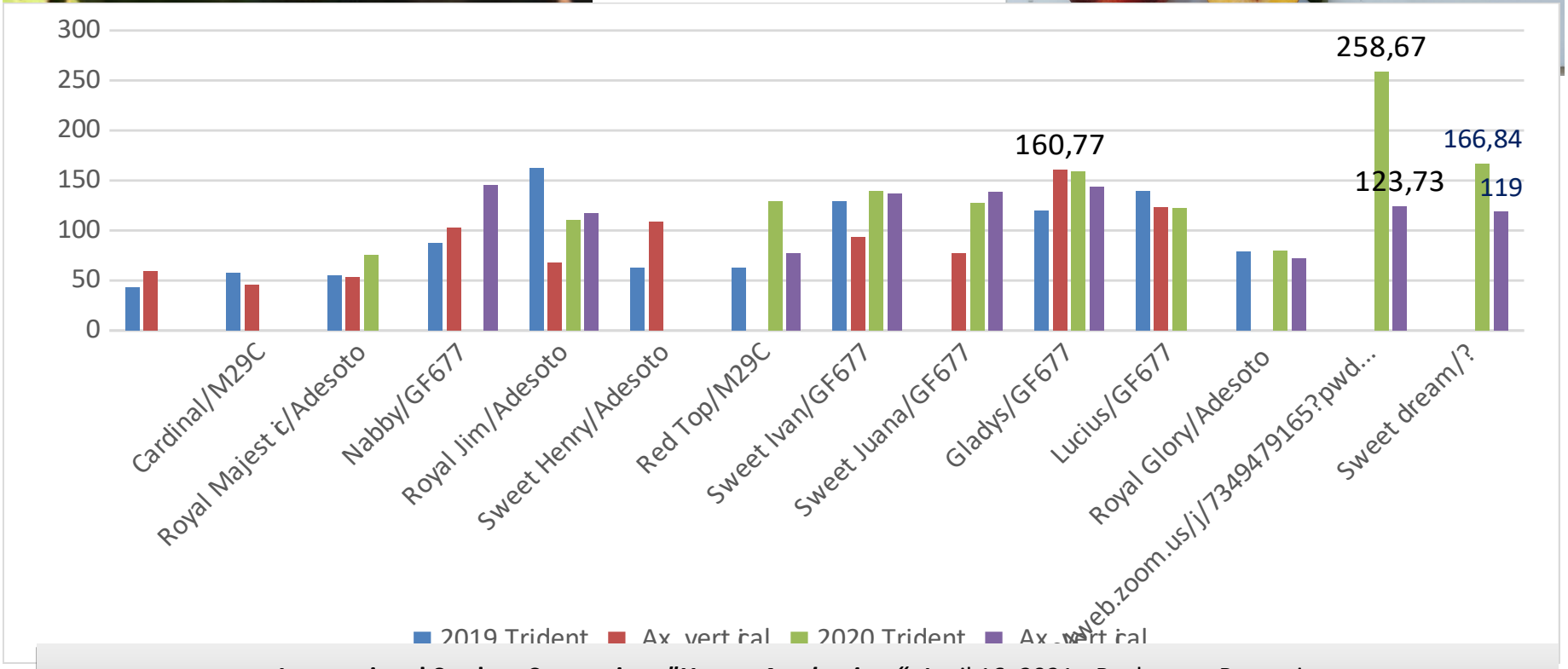


Results and discussions

Gladys/GF677

Sweet dream/GF677

Peach fruit weight (g)

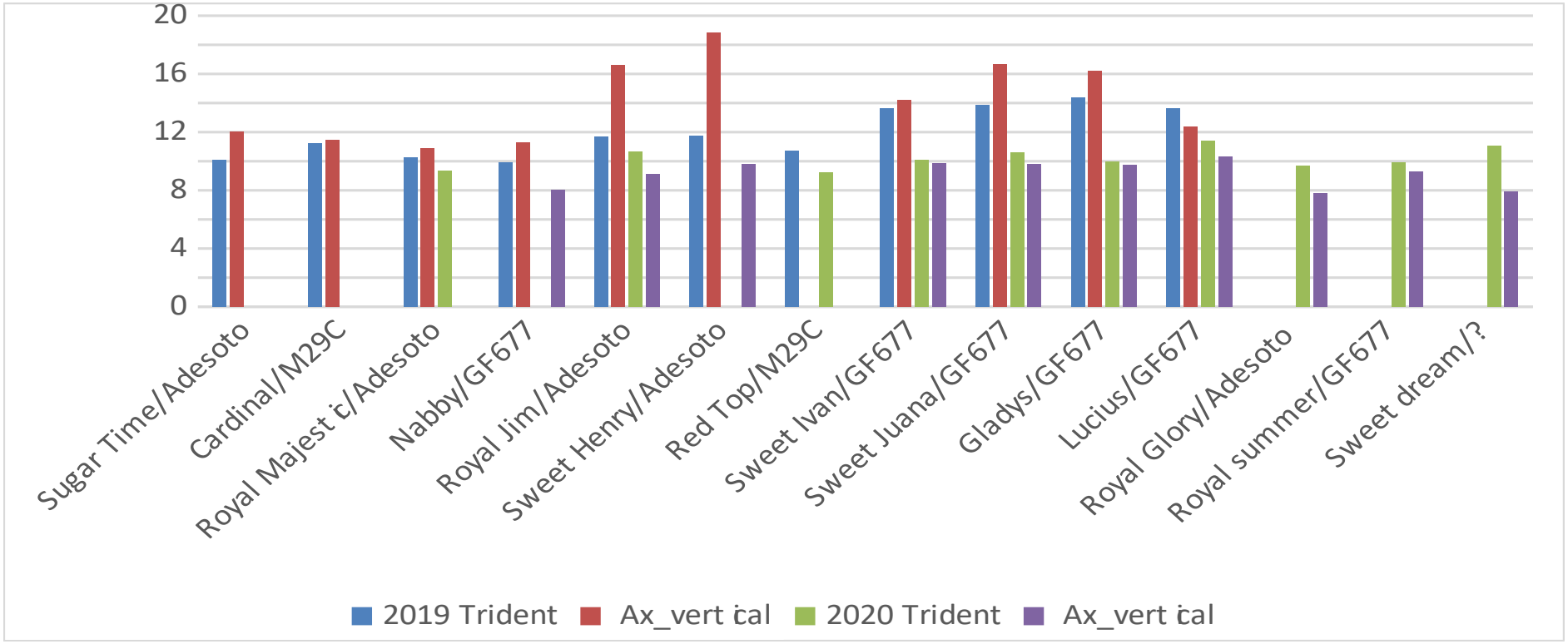


Results and discussions

Royal Jim/Adesoto

Total soluble solids in peach fruits

- In 2019, TSS was higher on Vertical axe compared to Trident. In 2020 they were similar
- In average, TSS in 2019 was higher than in 2020

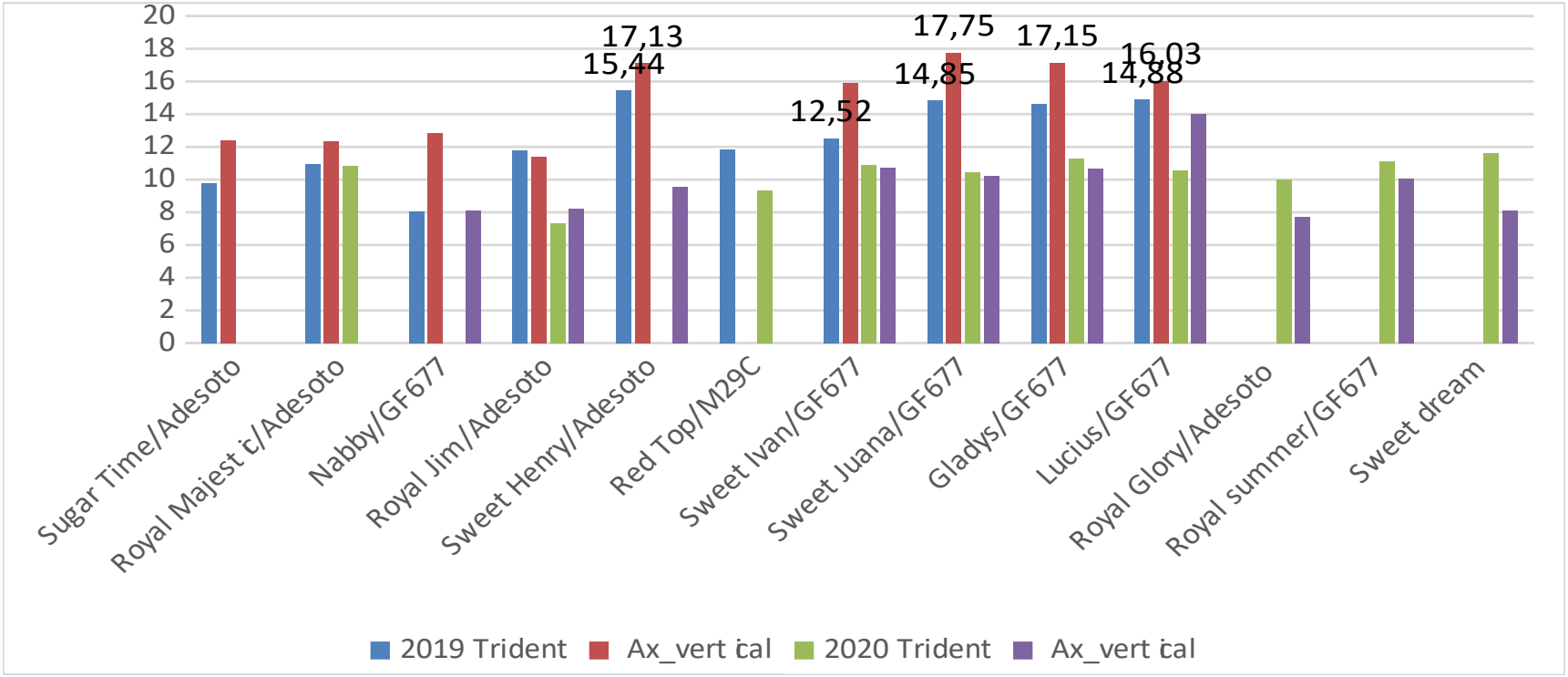


Results and discussions

Lucius/GF677

Total dry matter of peach fruits

- Total dry matter content was higher on the Vertical Axe than on the Trident in 2019
- In 2020 they were similar
- The total dry matter was higher in 2019 compared to 2020 for both crown shapes

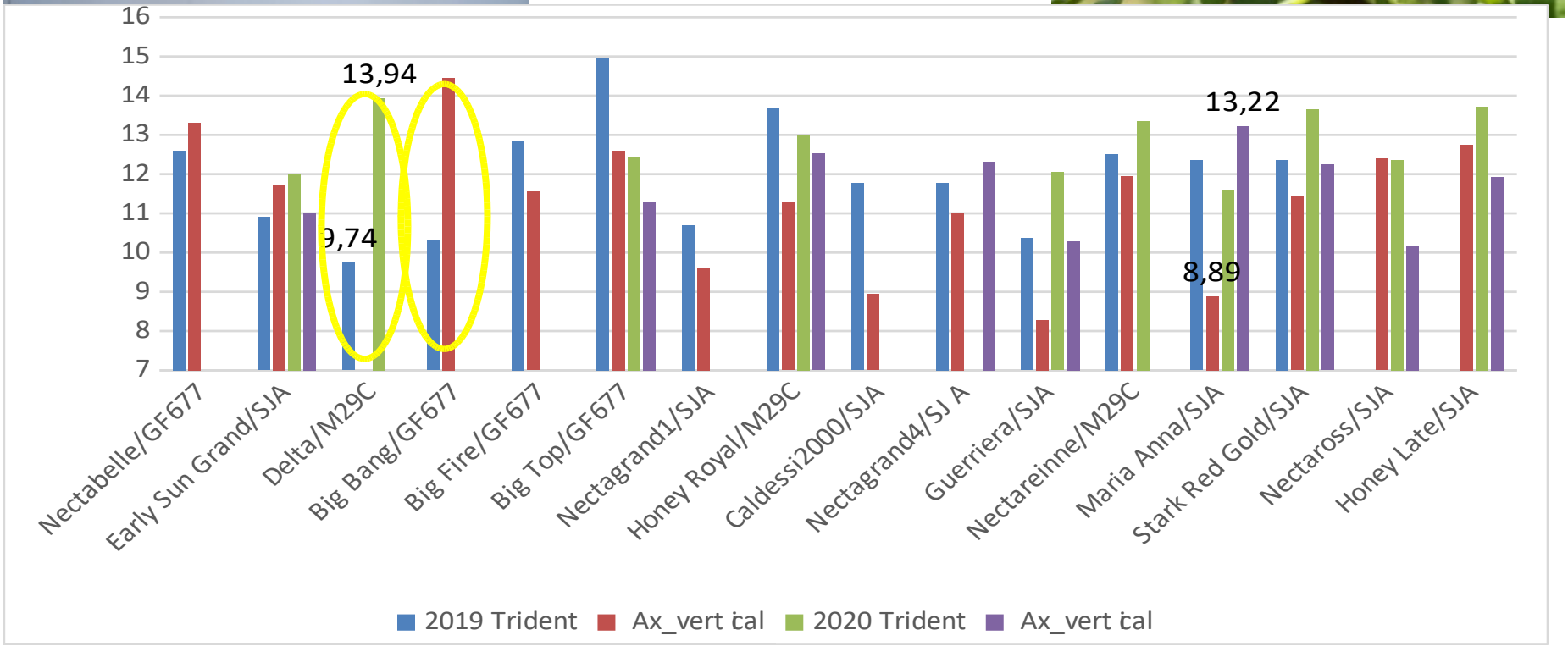


Results and discussions

Delta/Mir.29C

Big Bang/GF677

Total dry matter in nectarine



Results and discussions

- The influence of cultivars with different ages on fruit quality (2017-2000)

- Fruit quality for the older Springbelle cultivar was higher than the young one in 2019
- The values obtained for the Cardinal cultivar showed a better quality for the younger cultivar.

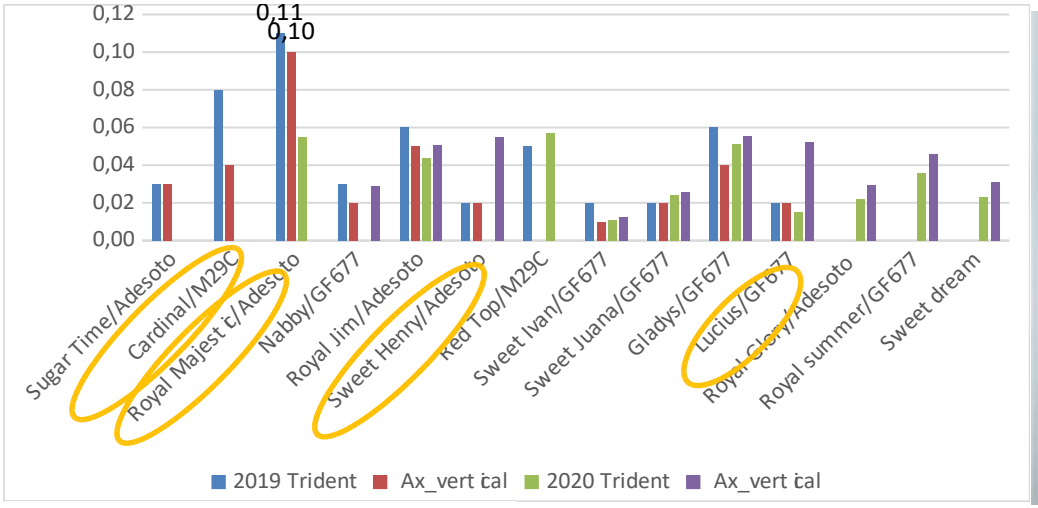
Springbelle/Mir.29C

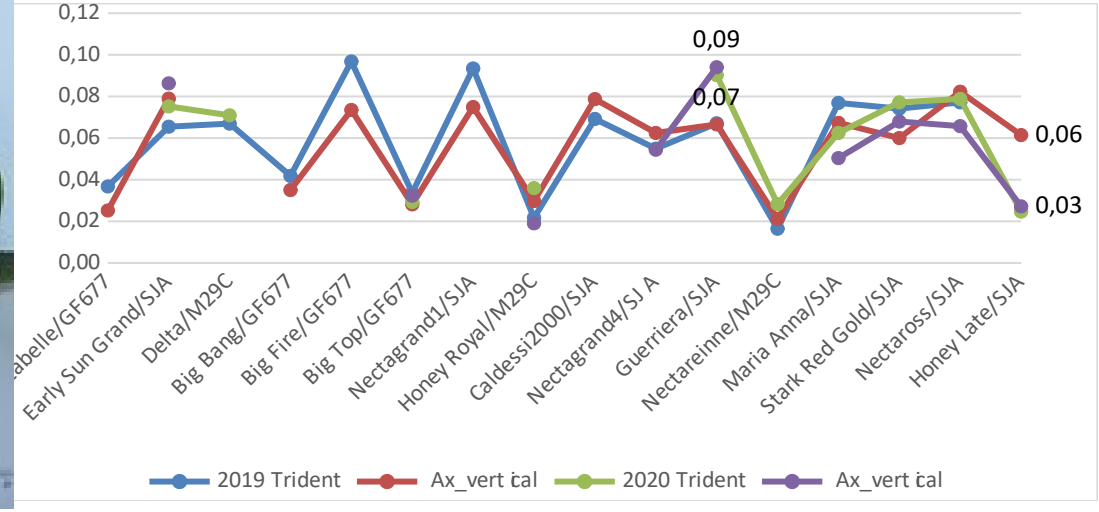
Cardinal/Mir.29C

Soiul	Tip	Greutate medie (g)	h (mm)	D mediu (mm)	Indice de forma	Fermitate (kg f/cm)	SUS (% Brix)	SUT (%)	Aciditate (%) acid malic	A/SUS
Springbelle/M29C	2019	51,88	47,44	48,35	0,98	2,28	7,26	7,36	0,56	0,08
Springbelle_v	2019	141,04	71,01	69,23	1,03	1,65	11,81	10,87	0,49	0,04
Cardinal/M29C	2019_Tr	57,44	50,83	77,34	0,89	3,85	11,25	12,48	0,87	0,08
Cardinal/M29C	2019_Ax	45,72	49,39	50,68	0,97	1,41	11,47		0,49	0,04
Cardinal_v	2019	47,09	40,54	54,71	0,76	2,26	10,21	10,41	0,65	0,06

Results and discussions

Acidity/Total soluble solids





Conclusions and recommendations

- For some varieties, older trees influences the fruit quality
- Springbelle cultivar also improves the fruit quality as it ages
- Trident canopy recorded better values of the fruit characteristics than the Vertical axe
- Higher fruit weight on Trident than on Vertical axe.
- The amount of soluble sugar recorded in peach was higher on the Vertical axe, while for nectarine, the highest amount was obtained on Trident.
- Researches will continue with physico-chemical analyses and further monitoring of the plants.

Thank you for your kind attention!
Questions?